

What is claimed is:

1. A microfluidic device comprising:
  - a body structure having at least first, second and third substrate layers, the second substrate layer disposed on top of the first substrate layer and the third substrate layer disposed on top of the second substrate layer;
  - at least first, second and third ports disposed in the body structure; and
  - at least first and second microscale channel networks, the first channel network disposed between the first and second substrate layers, and being in fluid communication with the first and second ports, but not the third port, and the second channel network disposed between the second and third layers, and being in fluid communication with the first and third ports, but not the second port.